**CODE/MOE/UOIT Makerspaces Project--Lesson Planning Template**

**School Board: Rainy River District School Board**

**Grade(s): 4**

**Subject(s): Mathematics**

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| **BIG IDEAS:**  **To use the Ozobots to go “Trick-or-Treating” while students measure the distance and time travelled.**  **Curriculum Expectations:**  **OVERALL:**  estimate, measure, and record length, perimeter, area, mass, capacity, volume, and elapsed  time, using a variety of strategies;  **SPECIFIC:**  -describe, through investigation, the relationship between various units of length. | |
| **Learning Goals:**  “We are learning to…”  -measure the distance of lines using a ruler or string. | **Success Criteria:**  “We will be successful when…”  **-**accurately measure the distance of a line. |
| **Lesson Overview:**  Students will begin by drawing a neighbourhood with houses, roads, and sidewalks. Students will then create routes that their Ozobots will take “Trick-or-Treating”. Students will measure the distance the Ozobots travelled. | |
| **Materials and Technology:**  -Ozobots  -Paper  -Markers  -Rulers  -String | |
| **Student Accommodations/Modifications:**  **-Some students may be required to travel to fewer houses.**  **-Students who do not participate in Halloween can draw a paper route.** | **Lesson will be differentiated by:**   * **Content, specifically:** * **Process, specifically:** * **Product, specifically:** * **Environment, specifically:** |
| **MINDS ON: Getting Started** | |
| During this phase, the teacher may:  • activate students’ prior knowledge;  • engage students by posing thought-provoking questions;  • gather diagnostic and/or formative assessment data through observation and questioning;  • discuss and clarify the task(s). | During this phase, students may:  • participate in discussions;  • propose strategies;  • question the teacher and their classmates;  • make connections to and reflect on prior learning. |
| **Describe how you will introduce the learning activity to your students.**  -The activity will start with a discussion on safe trick or treating practices.  -Students will use the Ozobot code on their route.  **What key questions will you ask?**  -What is the most efficient route?  -How can you measure a line that is not straight?  -What code can you draw for your Ozobot to make the journey quicker?  **How will you gather diagnostic or formative data about the students’ current levels of understanding?**  -Videos, observations, accompanying worksheet  **How will students be grouped? How will materials be distributed?**  -Could be independent, partners, or small group. | |
| **ACTION: Working on it** | |
| During this phase, the teacher may:  • ask probing questions;  • clarify misconceptions, as needed, by redirecting students through questioning;  • answer students’ questions (but avoid providing a solution to the problem);  • observe and assess;  • encourage students to represent their thinking concretely and/or pictorially;  • encourage students to clarify ideas and to pose questions to other students. | During this phase, students may:  • represent their thinking (using numbers, pictures, words, manipulatives, actions, etc.);  • participate actively in whole group, small group, or independent settings;  • explain their thinking to the teacher and their classmates;  • explore and develop strategies and concepts. |
| **Describe the task(s) in which your students will be engaged.**  -Using the Ozobots, designing their neighbourhoods, and measuring routes with rulers will engage learners.  **What misconceptions or difficulties do you think they might experience?**  -How to get the Ozobot to successfully follow the route and read codes.  -How to measure a line that is not straight.  **How will they demonstrate their understanding of the concept?**  -By describing how to measure the route and accurately doing so.  **How will you gather your assessment data (e.g., checklist, anecdotal records)?**  -Checklist  -Worksheet  -Videos  **What extension activities will you provide?**  -Students could do a paper route to collect money and would need to calculate their total earnings.  -Students could measure elapsed time on the route using a stop watch.  -Design costumes for the Ozobots to wear.  -Could be used as Santa’s route across the globe. | |
| **CONSOLIDATION: Reflecting and Connecting** | |
| During this phase, the teacher may:  • bring students back together to share and analyse strategies;  • encourage students to explain a variety of learning strategies;  • ask students to defend their procedures and justify their answers;  • clarify misunderstandings;  • relate strategies and solutions to similar types of problems in order to help students generalize concepts;  • summarize the discussion and emphasize key points or concepts. | During this phase, students may:  • share their findings;  • use a variety of concrete, pictorial, and numerical representations to demonstrate their understandings;  • justify and explain their thinking;  • reflect on their learning. |
| **How will you select the individual students or groups of students who are to share their work with the class (i.e., to demonstrate a variety of strategies, to show different types of representations, to illustrate a key concept)?**  **-**We will display routes that were successfully coded to learn strategies that will help those who had difficulties.  **What key questions will you ask during the debriefing?**  -What problems did you have coding the Ozobots?  -Are there any changes you would make next time? | |